



## *X-Plain™*

### *Diabetes and Meal Planning*

### **Reference Summary**

A healthy diet helps to control and sometimes prevent diabetes.

Your doctor may have told you that you have diabetes or are at risk of developing diabetes. Changes in your diet will help control your blood sugar.

This patient education program will help you understand healthy eating habits, especially related to diabetes.

#### **Diabetes**

The body is made of millions of cells that need energy to function. Some of the food we eat is turned into sugar, called glucose.

The blood stream carries glucose to the cells. It is one of the most important substances the cells need to make energy.

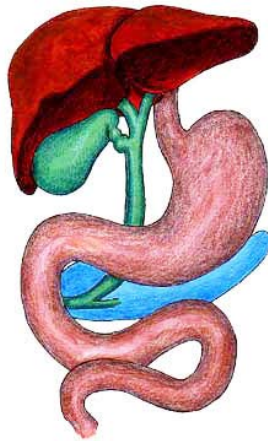
For glucose to enter a cell, 2 conditions must be present.

The cell must have enough “doors,” called receptors.

A substance called insulin must be available to “unlock” the receptors.

With enough receptors and insulin to “unlock” them, glucose enters the cell and is used to make energy. Without energy, all cells die.

Insulin is a chemical hormone the pancreas makes. Insulin levels in the blood change depending on how much glucose is in the blood.



Diabetes is a disease that makes it hard for cells to get the glucose they need to make energy.

Type 1 diabetes occurs when the cells in the pancreas that

make insulin are destroyed. Type 1 diabetics lack insulin, which causes them to have high blood sugar.

Type 2 diabetes occurs when a body has enough insulin but there are not enough receptors on the cells to allow glucose to enter. This results in high blood sugar also.

#### **Diet & Diabetes**

A healthy and balanced diet is very important for everybody, but even more so for diabetics.

You can control your blood sugar successfully if you

1. maintain an optimal weight
2. pay attention to WHAT you eat
3. consider HOW MUCH you eat

For type 2 diabetics, diet and lifestyle changes can control blood sugar so well that for some patients medication is not needed.

The body constantly uses energy to keep itself at a normal temperature and to

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carry out bodily functions. Energy is measured in calories. A “calorie” is a unit of energy that is made available to the body by the food we eat.

The amount of calories that a person needs depends on their age, size, level of activity and metabolism. A large person needs more calories than a small person because a bigger body needs more energy than a smaller body. Physically active people need more calories than inactive people.

People of the same age, size, and activity level may require a different amount of calories per day, because some people naturally burn more calories than others.

Medical conditions can also affect metabolism. For example, a person with a thyroid gland that does not secrete enough thyroid hormone will have a slower metabolism.



When a person eats more calories than they need, the extra calories are stored in the fatty tissues of the body and can lead to increased weight.

When a person eats fewer calories than they need, the body burns fat to supply the needed calories and the person loses weight.

One way to control sugar levels, is to keep body weight as close as possible to an ideal weight.

Your doctor and registered dietitian can help you to know your ideal body weight. After determining your ideal body weight, they can help you figure out how many calories you need in one day.

People who are 20% heavier than their ideal weight are medically “obese.” To reduce weight, they should eat fewer calories than their body needs.

### **Food Groups**

Food is commonly divided into the following 6 food groups.

1. fat and cholesterol
2. proteins
3. carbohydrates
4. vitamins
5. minerals
6. fibers

Too much fat and cholesterol in the blood can lead to blocked arteries in the heart and brain, as well as other organs. Blocked arteries very often lead to heart attacks and strokes.

1 gram of fat = 9 calories. Carbohydrates and protein only have 4 calories per gram. Less than 30% of your total calories should come from fat.

There are 2 types of carbohydrates: simple and complex.

Simple carbohydrates are found in candies, honey, syrup, and soda. Complex carbohydrates are found in fruits and vegetables, whole-grain breads and cereals, dried beans and peas, and lentils and legumes.

Simple carbohydrates tend to increase blood sugar much faster than complex ones. Complex carbohydrates satisfies a person’s hunger for a longer period of time. Complex carbohydrates like whole grains are better choices due to the high fiber content.

1 gram of carbohydrate = 4 calories. 50-60% of total calories should come from carbohydrates.

Proteins are very important for the body. Protein can be found in:

1. meat
2. poultry
3. fish
4. dry beans
5. eggs
6. nuts

1 gram of protein = 4 calories. No more than 10-20% of calories should come from protein.

The body cannot make vitamins and minerals; we have to consume from. Without enough vitamins and minerals, the body could contract serious diseases. Too much vitamins can sometimes lead to disease; this is why it is important to discuss the use of any vitamins, even over-the-counter, with your doctor.

Common vitamins include

1. Vitamin A
2. Vitamin B
3. Vitamin C
4. Vitamin D
5. Vitamin K

Common minerals include

1. Salt, sodium or NaCl
2. Potassium or KCl
3. Calcium
4. Iron

Fiber is mainly found in non-animal products, such as vegetables and fruits.

Fiber, also known as roughage, helps to keep bowels regular and possibly protect against colon cancer.



Since the human body does not absorb fiber, it is not counted as consumed calories.

### **A Healthy Diet**

A healthy diet is a diet that provides the nutrients your body needs in sufficient amounts. Different people need different amounts of calories. Here are 6 general guidelines that apply to all people and more importantly, to diabetics.

1. *Eat a variety of foods.* No single category of food can give you all the nutrients you need. A healthy diet always includes food from each of the different food groups.
2. *Eat the amount of food your body needs.* When you eat more food than

your body needs, the extra calories are stored as fat. Find your ideal weight and activity level, and strive to reach and keep that weight.

3. *Eat a lot of grain products, vegetables, and fruits.* Dietitians recommend plant foods because they include few calories and a lot of fiber, vitamins, and minerals. In addition, they have no cholesterol, and are low in fat.
4. *Eat a diet low in fat and cholesterol.* Less than 30% of the calories eaten by diabetics should come from fat.
5. *Choose moderation for certain foods and drinks.* Carbohydrates, specifically candy, desserts, sweetened drinks, salt, and alcohol, should be consumed in moderation.
6. Refrain from smoking!!

### **The Pyramid**

You may be familiar with the food pyramid developed by the US Department of Agriculture.

The Food Pyramid is a guide for healthy eating that suggests eating daily a variety of food while eating the appropriate amount from each group of food in the first 3 levels.

On the 1st level are the complex carbohydrates that make up most of the calories you consume in a day.

On the 2nd level are the vegetables and fruits.

On the 3rd level are the dairy products, meat, eggs, and nuts.

At the very top are the fats, oils, and sweets. It is not important to eat these every day!

The amount of food eaten is measured in a unit called a "serving." Depending on the food group, the serving size may be measured in cups, grams, slices, or whole fruits.

The number of servings from each group is shown on the pyramid. It is a range because the recommended number depends on the person's age, weight, gender, and other factors. How many servings you need from each group depends on the amount of calories you need each day.

The servings defined by the pyramid guide are much smaller than what we might think of as a serving in a restaurant. For example, an 8-oz. steak is equal to FOUR servings!

Some diabetics take medications, they should eat similar amounts of food at the same times each day. They should also keep their physical activity consistent from day to day. This consistency helps keep blood sugar in better control.

The diabetic care team members can help patients create a diet and medication plan. These plans account for increased activities at special times. For example, children with diabetes may need to increase their carbohydrate intake or decrease the amount of insulin they take over the weekend when they are expected to be more active.

### **Blood Sugar Levels**

It is important to check your blood sugar levels regularly as directed by your doctor. These checks may have to be done more frequently when changing diet, levels of activities or during sick days.



You may need to increase or decrease your medication, depending on the blood sugar levels.

You should call your doctor or diabetic care team if you have any questions.

### **Summary**

When eating healthy becomes a life habit, it can help prevent diseases. To make a healthy diet part of your life, you need information and motivation.

Healthy eating does not have to be difficult. There is lots of tasty and healthy food! Here are some tips for healthy eating:

Do not skip meals. Eat something every 4 to 5 hours.

No special or diet food are needed. It is the total amount of carbohydrates per meal or snack that matter. Watch the size of the portion you eat.

Choose foods lower in total fat especially saturated fat, lower in cholesterol, and lower in sodium.

Cooking and eating healthy so you can control your diabetes is not only good for you; it is also good for your family!



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